

ART. X.—*New or little known Fossils from the
Tertiaries of Victoria.*

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(With Plate XI.)

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In the present communication I figure and remark upon some fossils which have come into my hands from time to time from the Victorian Tertiaries. The presence of some of the genera has already been indicated in various lists which have been published, but the evidence of their correct identification afforded by descriptions and illustrations has not been given. In only two instances have I ventured to attach specific names, as I am unable in the case of the remainder to point to differences from other forms. It so happens that all the forms referred to have modern analogues, but it must be borne in mind that they are associated with others whose facies is far older, a fact to be bore in mind when attempts to correlate our formations with those elsewhere are made by those unfamiliar with the fauna as a whole.

The following fossils are treated :—

Melitodes (?) sp.

Pentagonaster, sp.

cf. Sigsbeia, sp.

Chirodota, sp.

Salmacina (?) tereta, n. sp.

Lepas pritchardi, n. sp.

Alcyonaria.

Gorgonidae.

MELITODES (?) sp. (Pl. XI., Figs. 1, 2, 3).

Several specimens of the calcified segments of an Alcyonian stem from "Forsyth's" appears identical with those of a specimen of *Melitodes* in the Museum of the Biological department

from an unknown locality. The generic identification of the Gorgonidae rests more on the characters of the spicules than of the stem segments, but in the case of our fossils we have not this important aid at our command. Still the resemblance of the specimens to the recent species is so great that, provided any reliability can be placed on the characters afforded by stem joints, there seems no reason why they should not be referred to this genus.

Associated with these forms at "Forsyth's" is a number of joints of quite different characters, but in the absence of recent material as a guide I shall not attempt to place them. Stem segments from our beds have been referred by Duncan to *Isis*, but for no very apparent reason. Microscopic spicules apparently of *Alcyonaria* are abundant in some of our Older Tertiary clays.

Locality and Age.—Grange Burn ("Forsyth's"). Kalimnan (? Miocene).

Asteroidea.

PENTAGONASTER, sp. (Pl. XI., Figs. 4, 5.)

Marginal plates of Phanerozonic Starfish are not uncommon in our Older Tertiary beds, but as they are not very striking in appearance, are apt to be passed over as worn fragments. I had collected a good many, and from their calcitic cleavage had recognised that they belonged to Echinodermata, but got no further till I showed them to Prof. J. W. Gregory, and he pointed out their nature. Similar plates are figured in Eastman's translation of Zittel's Handbook of Palaeontology. Compared with plates from the recent *Pentagonaster australis* of our coasts, we find the fossils are for the most part more compressed laterally, or are more elongate in the dorsiventral line. In shape they are, roughly speaking, quadrants of a thick disc. The greatest diameter of an average specimen is about 5 mm. The largest I have seen is 13 mm., and the smallest about 2 mm. in diameter. It seems hardly worth while attempting to fix a name to such fragments, as their distinguishing characters are so few and perhaps more than one species is represented.

Localities and Age.—Muddy Creek (upper and lower beds), Spring Creek, Waurm Ponds and Batesford (Jan Jukian, Balcombian and Kalimnan). Prof. Tate has recorded *Astrogonium*¹ from our Older Tertiary beds, and possibly my specimens are similar to those he collected.

Ophiuroidea.

cf. SIGSBEIA. (Pl. XI., Figs. 6, 7.)

A single vertebral ossicle is all I have found to show the presence of the order in our tertiaries. Its articular faces somewhat resemble those of Sigsbeia, as figured by Lyman,² but there is a rather closer approach to the hour-glass shaped articulations of the Cladophiuræ than is shown by Sigsbeia, besides which, it differs from the latter genus in being wider above than below. The podial canals open on the distal face. Greatest width, 1.5 mm. The only specimen is somewhat corroded.

Locality and Age.—Grange Burn ("Forsyth's"), near Hamilton. Kalimnan (? Miocene).

Holothuroidea.

CHIRODOTA, sp. (Pl. XI., Fig. 8).

The spicules of holothures are not as a rule reliable guides to generic position, but wheels with six rays are in recent forms confined to the genus *Chirodota*,³ so I have referred the fossil to that genus.

The wheel figured measures 0.27 mm. in diameter, and was obtained by Mr. C. M. Maplestone in some material supplied to him by myself from the beds at Spring Creek. I believe that this is the first record of fossil holothurians from Australia. The genus is world wide in recent seas, and on this account we should be justified in assuming its backward range in time.

¹ Jour. Roy. Soc. New South Wales, v. 22 (1889), p. 252.

² Challenger Rep., v. 5, pl. 43, figs. 5, 6.

³ Theel, H.: Report on the Holothuroidea dredged by H.M.S. Challenger, pt. ii.; Challenger Reports, Zoology, vol. 14, p. 33. Ludwig, Dr. H.: In Bronn's Klassen und Ordnungen des Thierreichs, Bd. 2, Abth. 3, p. 39.

Locality and Age.—Spring Creek (Bird Rock Zone). Jan Jukian (? Eocene).

Chaetopoda.

Serpulidae.

SALMACINA (?) TERETA, n. sp. (Pl. XI., Fig. 9).

Numerous examples of almost straight intertwining calcareous tubes occur in the Kalimnan beds at "Forsyth's," on the Grange Burn, near Hamilton. They closely resemble in size and habit the tubes of *Salmacina australis*, Haswell, which is common in Port Phillip and Port Jackson. The tubes have an external diameter of 0.4 mm., and are marked by rounded lines of growth and an occasional funnel-shaped expansion where the mouth of tube formerly lay. In the recent species there is occasional dichotomous division of the tube, as shown in Fig. 10. I have not seen any trace of this in the fossil specimens, but the latter occur as small fragments, and are usually somewhat rolled. It is, of course, impossible to refer tubes of this nature to any particular genus with absolute certainty, nor indeed cylindrical tubes to any particular part of the animal kingdom. Very similar objects have been referred to *Serpula*, but with *Salmacina* actually living on our coasts, we may perhaps have some slight justification in regarding our fossil as belonging to the same genus. I have to thank Mr. R. Etheridge, jun., for a specimen of *S. australis*, from Port Jackson, which enabled me to determine our Port Phillip examples as belonging to the same genus if not indeed to the same species.

Locality and Age.—Fairly common, but much broken, in the beds at "Forsyth's," on the Grange Burn, Hamilton. Kalimnan (? Miocene).

Crustacea.

LEPAS PRITCHARDI, n. sp. (Pl. XI., Figs. 11, 12, 13.)

The only two specimens I have seen are right scuta, which differ only in size. Viewed from the side, the occludent margin is slightly concave. The basal margin is almost straight, but has

a slight convexity. The tergo-lateral margin is boldly curved, so that the part near the basal margin is almost at right angles to that near the occludent one. The basal margin bears a slightly thickened ridge within, and there is no umbonal tooth. Seen from the peduncular side, the basal margin is moderately curved. The lines of growth show that a slight addition was made to the basal margin throughout life. Radial markings are absent. Length of occludent margin of type, 30 mm.; greatest width of valve at right angles to this line, 27 mm. A specimen from Spring Creek, collected by Mr. G. B. Pritchard, measures 38 mm. in its greatest breadth.

Locality and Age.—Wauru Ponds, quarry below the school (type). Spring Creek (G. B. Pritchard). Jan Jukian (? Eocene).

I think there can be no doubt of the correctness of the generic position to which I have referred this fossil, though in shape it differs somewhat from the corresponding valve in all the recent species. The absence of an umbonal tooth may be due to corrosion, which is a fault many of our fossils from the polyzoal rocks exhibit. Still, if originally present, the tooth must have been small, and it is of course absent in some recent species.

Another peculiarity is the bending of the growth lines along the basal margin, a feature which Darwin says is not shown by any of the species known to him, for no addition by growth is made in this position by recent forms.

As regards the age of the specimens, no one apparently would suggest that the Wauru Ponds beds are younger than Miocene, while some Australian authors call them Eocene. Even if we take the youngest estimate, namely Miocene, the fossil is the oldest member of the genus yet discovered.

EXPLANATION OF PLATE XI.

Figs. 1, 2, 3.—*Melitodes* (?). Stem-joints. Grange Burn.

„ 4, 5.—*Pentagonaster*, sp. Marginal plates seen from from two directions. Wauru Ponds.

- Figs. 6, 7.—cf. *Sigsbeia*, sp. Vertebral ossicle, distal and proximal faces. Grange Burn.
- „ 8.—*Chirodota*, sp. Wheel spicule. Spring Creek.
- „ 9.—*Salmacina* (?) *tereta*, n. sp. Grange Burn.
- „ 10.—*Salmacina australis*, Haswell. Recent. Port Jackson.
- „ 11.—*Lepas pritchardi*, n. sp. Wauru Ponds. Side view.
- „ 12.—The same, seen from peduncular side.
- „ 13.—The same. Umbonal angle, seen from within, showing thickening of basal margin.
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